

Application No.: 09/803702

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A version marked up to show changes made to the claim(s) relative to the previous version of the claim(s) is attached.

Remarks

Claims 5, 6, 8 and 10 have been amended. No new claims have been added. Claims 1-19 are pending. Examination and reconsideration of the application as amended is requested.

§ 101 Rejections

Claims 1-19 stand rejected under 35 U.S.C. § 101 as claiming the same invention as that of claims 1-9, 11-14, and 17-20 of U.S. Patent Application No. 09/803,708 (published as U.S. 2003/0001130). The rejection is traversed.

The reference is directed to a fluorochemical ester composition, which is the reaction product of (in part) a polyacyl compound. With reference to the published application, the polyacyl compounds are defined on page 7, paragraphs 95 to 100 and include, for example dicarboxylic acids, anhydrides and esters.

In contrast to the reference, the present claims are directed to a fluorochemical urethane composition, which is the reaction product of (in part) a polyisocyanate. The instant polyisocyanate compounds are defined on pages 11, line 10 to page 13, line 6. Applicant's limitation of a polyisocyanate reaction product is not contemplated by the reference.

Applicants submit that the rejection of claims 1-19 under 35 U.S.C. § 101 has been overcome, and that the rejection should be withdrawn.

§ 112 Rejections

Claims 1, 2, 4, 6, 9, 10, 14, 16 and 18 stand rejected under 35 U.S.C. § 112, first paragraph, as being indefinite for failing to enable the subject matter which Applicants regard as the invention. The rejections are traversed.

The Examiner's assertion that the objectionable terms are not supported, and that "appropriate correction is required" does not provide Applicants with sufficient information to address the alleged problem. The test for definiteness is whether "those skilled in the art would understand what is claimed when the claim is read in light of the specification." *Orthokinetics*.

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Inc. v. Safety Travel Chairs, Inc., 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986).

If one skilled in the art is able to ascertain the meaning of the terms in light of the specification, 35 U.S.C. § 112 is satisfied.

The Examiner appears to assert that Applicant's limitation of "at least one fluorine-containing repeatable unit" is unduly broad and not enabled by the specification. Applicants disagree. In making the rejection, the Examiner is ignoring the claim as a whole, and focusing on the objected term *in vacuo*. The claim is directed to a urethane composition that comprises (in part) the reaction product of a polyisocyanate and a fluorinated polyol. As each of these reactants is polyfunctional, the reaction product can repeat, forming a chain of alternating units derived from each of these two reactants. This is best illustrated by, but not limited to, the compounds of Formula I, where the repeat unit is exemplified by $(-\text{CONH}-\text{R}^1-\text{NHCO}-\text{OR}^2\text{O}-)_n$, where R^1 is the residue of a polyisocyanate and R^2 is the residue of fluorinated polyol. As the fluorinated portion of the repeat unit is derived from the fluorinated polyol, Applicant's have provided an abundant description from page 13, line 7 to page 15, line 32, and have included numerous specific examples of useful fluorinated polyols. Clearly, one skilled in the art would understand Applicant's use of the term.

The Examiner appears to assert that Applicant's limitation of "at least one fluorine-containing terminal group" is unduly broad and not enabled by the specification. Applicants disagree. The fluorine-containing terminal group is derived from the "monofunctional fluorine-containing compound", and is exemplified by the R_f group of Formula I, page 9 where it is defined as is a perfluoroalkyl group having 1 to 12, preferably 1 to 6, most preferably 3 to 5 carbon atoms, or a perfluoroheteroalkyl group having 3 to about 50 carbon atoms with all perfluorocarbon chains present having 1 to 6, preferably 1 to 4 carbon atoms. Consistent with this definition of R_f , the Examiner attention is directed to the description of the "monofunctional fluorine-containing compound" on page 18, line 12 to page 22, line 32.

The Examiner appears to assert that Applicant's limitation of "fluorinated polyol" is unduly broad and not enabled by the specification. Applicants disagree. Applicants have provided an abundant description of the term on page 13, line 7 to page 15, line 32, and have included numerous specific examples of useful fluorinated polyols. The term "polyol" *per se* is defined at page 8, lines 5-7. Clearly, one skilled in the art would understand Applicant's use of

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the term. As evidence of the understanding of one skilled in the art, the Examiner is invited to review the claims of U.S. 6,313,335, which uses the term.

The Examiner appears to assert that Applicant's limitation of "polyisocyanate" is unduly broad and not enabled by the specification. Applicants disagree. The term is specifically defined on page 8, lines 1 to 4, and on page 11, line 8 to page 13, line 6 and include many illustrative examples of useful polyisocyanates. One skilled in the art would understand Applicant's use of the term.

The Examiner asserts that Applicant's limitation of "monofunctional fluorine containing compounds" is unduly broad and not enabled by the specification. Applicants disagree. The monofunctional fluorine-containing compound provides the fluorine-containing terminal group, R_f , of Formula I. As previously indicated, the term is abundantly described at page 18, line 12 to page 22, line 32. If the Examiner believes that one skilled in the art, aided by Applicant's disclosure, would still not understand the term, Applicant's respectfully request the Examiners' reasoned arguments for this.

The Examiner asserts that Applicant's limitation of "water solubilizing compounds" is unduly broad and not enabled by the specification. Applicants disagree. The water-solubilizing groups of the water solubilizing compounds improve the aqueous solubility or dispersability of the claimed urethane compounds are described on page 23, line 31 to page 25, line 25, and include many specific compounds that may be used for this purpose. One skilled in the art would understand Applicant's use of the term. As evidence of the understanding of one skilled in the art, the Examiner is invited to review the claims of U.S. 6,313,335, which uses the term.

The Examiner asserts that Applicant's limitation of "polymerizable groups" is unduly broad and not enabled by the specification. Applicants disagree. The polymerizable compound comprises a functional group capable of reacting with an isocyanate group and a polymerizable group, so that the polymerizable group is incorporated into the product urethane compound. The polymerizable compounds are described on page 25, line 26 to page 26, line 3. Applicants assert the term is fully enabled, and one skilled in the art, aided by Applicant's disclosure, would understand the use of the term. As evidence of the understanding of one skilled in the art, the Examiner is invited to review the claims of U.S. 6,197,426 and U.S. 6,162,369, which use the term.

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The Examiner asserts that Applicant's limitation of "electrophilic or nucleophilic moiety" is unduly broad and not enabled by the specification. Applicants disagree. Again, the Examiner ignores the context and focuses on the term *in vacuo*. The term, in the context of claim 2, refers to the water-solubilizing compounds that are reacted with the subject urethanes. The water-solubilizing moiety is incorporated by reaction with a hydroxyl group (of the polyol) or an isocyanate group (of the polyisocyanate). One skilled in the art, aided by Applicant's disclosure, would understand the limited number of electrophilic functional groups that would react with a hydroxyl group, or the limited number of nucleophilic groups that would react with an isocyanate group to incorporate the water-solubilizing group. Far from being unduly broad, or not enabled, Applicant's have provided abundant disclosure for making the selection, and such selection would not require undo experimentation.

The Examiner asserts that Applicant's use of the terms "perfluoroalkyl", "perfluoroheteroalkyl", and "perfluoroheteroalkylene" and does not provide reasonable enablement for one skilled in the art. Applicants disagree. The term perfluoroalkyl is specifically defined at page 7, line 13. The term perfluoroheteroalkyl is defined on page 7, line 20. The term perfluoroheteroalkylene is defined on page 7, line 17. As the claims are interpreted in light of the specification, and ample disclosure is provided, it should not be necessary to incorporate the definition of the terms into the claim to render it understandable to one skilled in the art. At the Examiner's request, Applicants can provide numerous patents that use the claims terms consistently with the instant claims.

The Examiner asserts that Applicant's use of the terms "non-fluorinated polyol" does not provide reasonable enablement for one skilled in the art. Applicants disagree. The non-fluorinated polyol may optionally be used in addition to the fluorinated polyol, previously described. The non-fluorinated polyol can alter the melt temperature of the fluorochemical composition, making it more effective at the processing temperatures normally used in a given application. Increased cost effectiveness is also achieved by replacing a portion of the more expensive fluorinated polyol(s) with the less expensive non-fluorinated polyol(s). The selection of the non-fluorinated polyol(s) and the amount to use is determined by the performance requirements, for example melt temperature and repellency. A useful range of ratios of non-fluorinated polyol(s) to fluorinated polyols is about 1:1 to about 1:100. As noted, "polyol" is

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defined on page 8, lines 5-8 and abundant description is provided on page 15, line 30 to page 18, line 11.

The Examiner asserts that Applicant's use of the "Q group" does not provide reasonable enablement for one skilled in the art. Applicants disagree. The Q group is a divalent linking group that connects the terminal fluorine-containing group to either the polyol or the isocyanate. As result, Q is that group that is derived from the reaction with the hydroxyl of the polyol, or the isocyanate of the polyisocyanate. One skilled in the art, aided by Applicant's disclosure, would understand the limited number of electrophilic functional groups that would react with a hydroxyl group, or the limited number of nucleophilic groups that would react with an isocyanate group to incorporate the R₁ group, forming the linkage defined by Q. At the Examiner's request, Applicants can provide numerous patents that use the claims terms consistently with the instant claims.

In support of each rejection, the Examiner cited the "Wand Factors", yet does not meet the burden on the Examiner as recited in M.P.E.P. 2164.01(a) and 2164.04. Specifically, the Examiner asserts that the 76 examples and accompanying 45 pages of text are somehow insufficient to support the breadth of the claims.

Applicants assert that breadth is not to be equated with indefiniteness and that if the scope of the claims is clear, then the claims cannot be found to be indefinite. Further, in asserting the Wand factors, the Examiner is required to consider the breadth of the claims, the nature of the invention, the state of the prior art, the level of one of ordinary skill, the level of predictability, the amount of direction provided, the existence of working examples, and the quantity of experimentation required to make of use the invention based on the content of the disclosure. Instead, the Examiner has focused only on the supposed breadth of the claim terms, and dismissed, or has not addressed the remaining factors. It is improper to conclude that a disclosure is not enabling based on an analysis of only one of the above factors; the Examiner must consider all the evidence related to each and any conclusion must be based on evidence as a whole. For example, the Examiner never addresses the state of the prior art in assessing the Wand factors; an analysis that Applicant's believe would negate the instant rejections. Further, the Examiner has not provided a reasoned argument for the finding that Applicant's 76 examples and teachings of every claim term are insufficient.

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In support of the rejection, the Examiner cites *In re Angstadt et al.*, 190USPQ 152, (CCPA-1990). Applicant's Agent thanks the Examiner for bringing the case to his attention and finds on review, that the case supports Applicant's position. In this case the CCPA reversed a holding of the Board, noting that the relevant inquiry was whether the applicant had disclosed enough to enable one of ordinary skill in the art to practice the invention without undue experimentation. The court further noted that some experimentation is often to be expected in unpredictable areas or technologies, and concluded that the applicant process was unpredictable because one of his 40 examples clearly did not work and he admitted that not all of the metal-salt complexes worked. *Id.* at 503, 190 U.S.P.Q. at 218.

Nevertheless, the CCPA stressed that not every species encompassed by the claims, even in unpredictable arts, need to be disclosed. The court observed that if §-112 required a disclosure of a test with every species covered by a claim in an unpredictable art, then a prohibited number of actual experiments would have to be performed, discouraging the filing of patent applications in unpredictable areas. *In re Angstadt*, 537 F.2d at 503, 190 U.S.P.Q. at 218.

The court further observed that the applicant disclosed a large but finite list of materials to choose from in picking the catalyst, as well as 40 different examples of how the process could be carried out. The court found these teachings sufficient for it to be a routine matter for one of skill in the art to pick a catalyst out of the applicant's list and determine whether easily whether it works or not. *Id.* Accordingly, the court found that one of skilled in the art would be able to make any of the claimed embodiments without undue experimentation, despite the disparity between the number of examples taught in the specification and the much larger number of embodiments encompassed by the claims.

Far fewer than 40 working examples were sufficient to enable broad claims in *In re Wands*, *supra*, also cited by the Examiner

In the instant application, 76 Examples have been provided, further supported by a detailed description of each claim term used, and illustrative embodiments of each of these same claim terms. Applying the Court holdings of *In re Wands* or *In re Angstad*, it is apparent that none of the rejections asserted by the Examiner can be supported.

In support of the rejection, the Examiner further cites *In re Armbruster*, 185USPQ 204, (CCPA 1985). Applicant's Agent thanks the Examiner for bringing the case to his attention and

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find on review, that the case is not relevant. *Armbruster* illustrates that post-filing data submitted in support of enablement can be used to rebut an examiner's rejection, at least to the extent that the data stem from experiments using the teachings in the specification in view of that which is well-known in the art, and as such, do not constitute inadmissible "new matter" in the application.

Claims 8, 10 and 17 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The rejections are traversed in part and avoided in part by amendments presented herewith.

With respect to each of the rejections, MPEP § 2173.02 notes that some latitude in the manner of expression and the aptness of terms should be permitted even though the claim language is not as precise as the examiner might desire. In reviewing a claim for compliance with 35 U.S.C. § 112, second paragraph, the examiner must consider the claim as a whole to determine whether the claim apprises one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. § 112, second paragraph by providing clear warning to others as to what constitutes infringement of the patent. See *Solomon v. Kimberly-Clark Corp.*, 216 F.3d 1372, 1379, 55 USPQ2d 1279, 1283 (Fed. Cir. 2000). If other modes of expression selected by applicants satisfy the statutory requirements of 35 U.S.C. § 112, second paragraph, but the examiner merely wants the applicant to improve the clarity or precision of the language used, the claim must not be rejected under 35 U.S.C. § 112, second paragraph, rather, the examiner should suggest improved language to the applicant.

With respect to Claim 8, the Examiner objects to the "preferable" limitation. Applicants have amended claim 8 to delete the objectionable language.

With respect to claim 10, the Examiner asserts the phrases "an excess amount (relative to the polyol) of one or more linear alkylene diisocyanates", and "sufficient fluorinated monoalcohols to react with the terminal isocyanate groups". Applicants assert that the claim language is clear to one skilled in the art. The stoichiometric ratios of the isocyanate groups of the polyisocyanate, the hydroxyl groups of the polyol and the hydroxyl groups of the monoalcohols can vary by selection of a specific choice of each. To teach one to make the

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claimed compounds, Applicants teach that the polyol is in stoichiometric excess relative to the amount of isocyanate chosen, and then sufficient monoalcohol may be reacted with the remaining unreacted isocyanate groups. If the Examiner believes that one skilled in the art, aided by Applicant's disclosure, would still not understand the stoichiometry of the described reaction, Applicants respectfully request the Examiners reasoned arguments for this.

With respect to claim 17, the Examiner finds the term "solvent" indefinite. Applicants disagree. The coating compositions of the present invention comprise aqueous suspensions, emulsions, or solutions, or organic solvent (or organic solvent/water) solutions, suspensions, or emulsions of the fluorochemical oligomers of the present invention. When applied as coatings, the fluorochemical compositions of the present invention impart oil- and water-repellency properties, and/or stain-release and stain-resistance characteristics to any of a wide variety of substrates. Thus, a solvent is selected to provide a suitable suspensions, emulsions, or solutions. Applicants provide a description of useful solvents on page 29, lines 13-28. It is asserted that no undue experimental is required of the skilled artisan to select an appropriate solvent.

In summary, Applicants submit that the rejection of claims 8, 10 and 17 under 35 U.S.C. § 112, second paragraph, has been overcome, and that the rejection should be withdrawn.

§ 102 Rejections

Claims 1-4 stand rejected under 35 U.S.C. § 102(B) as being anticipated by Smith et al. (WO 93/01349). The rejection is traversed.

Smith et al. describes a fluorochemical composition comprising (a) a fluorochemical acrylate copolymer and (b) a polyalkoxylated polyurethane having pendant perfluoroalkyl groups. The polyurethane, (b), comprises an aliphatic or aromatic tri- or polyisocyanate; a fluorinated alcohol, amine or mercaptan; and a poly(oxyalkylene) diol or dithiol.

Instant claim 1 first differs from the reference composition first in that it does not contain the fluorochemical acrylate polymer, "(a)", as defined on reference page 8, line 35 to page 10, line 2. Further, instant claim 1 can be distinguished from the reference by the instant limitation of "a fluorinated polyol" as defined on page 13, line 7 to page 15, line 29. Such fluorinated polyols are neither taught nor suggested by the reference. TO the contrary, the reference requires a non-fluorinated poly(oxyalkylene). With reference to Formula I on page 7, the poly(oxyalkylene)

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group, (R¹), is defined on page 8, lines 6-10, and on page 14, line 38 to page 15, line 15. Again, there is no teaching or suggestion of Applicant's fluorinated polyol.

The rejection of claims 1-4 under 35 U.S.C. § 102(b) as being anticipated by WO 93/01349 has been overcome and should be withdrawn.

Objections

Claims 5, 6, 7 and 10 are objected to because of asserted informalities. Claims 5, 6 and 10 have been amended to correct the errors cited by the Examiner. With respect to claim 7, the Examiner objects to the table format of the claim. Applicant's Agent is not averse to removing the gridlines, but respectfully requests basis in the Rules for making such a request. Such a claim format has been used in the past, and has not been objected to.

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is requested. Allowance of claims 1-19 as amended, at an early date is solicited.

Respectfully submitted,

Date

2/26/03

By:

Kent S. Kokko, Reg. No.: 33,931
Telephone No.: (651) 733-3597

Office of Intellectual Property Counsel
3M Innovative Properties Company
Facsimile No.: 651-736-3833

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Version with markings to show amendments made:

1. Fluorochemical urethane composition comprising:
one or more oligomers comprising (i) at least one fluorine-containing repeatable unit and
(ii) at least one fluorine-containing terminal group, and wherein said compounds or oligomers
comprise the condensation reaction product of:
 - (a) one or more fluorinated polyols;
 - (b) one or more polyisocyanates; and
 - (c) one or more monofunctional fluorine-containing compounds comprising one
functional group that is reactive with the hydroxyl group of said polyol (a) or
with the isocyanate group of the polyisocyanate (b).
2. The oligomers of claim 1 further comprising the reaction product of one or more water-
solubilizing compounds comprising one or more water solubilizing groups and at least one
electrophilic or nucleophilic moiety, said solubilizing groups independently pendant from the
repeating unit, or terminal portion.
3. The water solubilizing compounds of claim 2 wherein said water-solubilizing group is
selected from the group consisting of carboxylate, sulfate, sulfonate, phosphonate, ammonium,
and quaternary ammonium groups.
4. The oligomers of claim 1 further comprising the reaction product of one or more
polymerizable compounds comprising one or more polymerizable groups and at least one
electrophilic or nucleophilic moiety, said polymerizable groups independently pendant from the
repeating unit, or terminal portion.
5. (Once amended) The polymerizable [polymrizable] compounds of claim 4, wherein said
polymerizable groups are selected from the group consisting of acrylate, methacrylate, vinyl,
allyl, and glycidyl groups.

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6. (Once amended) The compounds of claim 1 having the formula
 $R_f Q(OR^2O)_o(-CONH-R^1-NHCO-OR^2O-)_m(CONH-R^1-NHCO)_m-Z$

wherein:

n is a number from 1 to 10, inclusive,

o is a number from 0 to 1, inclusive;

m is a number from 0 to 1, inclusive

R_f is selected from the group consisting of perfluoroalkyl groups having 1 to 12 carbon atoms, and perfluoroheteroalkyl groups having 3 to about 50 carbon atoms;

Q is a divalent linking group;

R^1 is a divalent organic group which is the residue of a polyisocyanate [polyisocyanate];

R^2 is a divalent organic group which is a residue of the polyol, at least a portion of which is substituted one or more perfluoroalkyl groups, perfluoroheteroalkyl groups, perfluoroheteroalkylene groups, or mixtures thereof;

Z is $R_f Q-$, a water-solubilizing group or a polymerizable group.

7. The oligomer of claim 6, wherein Q is selected from the following structures, wherein each k is independently an integer from 0 to about 20, R_1' is hydrogen, phenyl, or alkyl of 1 to about 4 carbon atoms, and R_2' is alkyl of 1 to about 20 carbon atoms;

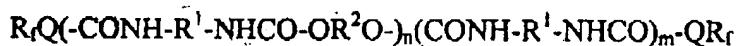
$-SO_2NR_1'(CH_2)_kO(O)C-$	$-CONR_1'(CH_2)_kO(O)C-$
$-(CH_2)_kO(O)C-$	$-CH_2CH(OR_2')CH_2O(O)C-$
$-(CH_2)_kC(O)O-$	$-(CH_2)_kSC(O)-$
$-(CH_2)_kO(CH_2)_kO(O)C-$	$-(CH_2)_kS(CH_2)_kO(O)C-$
$-(CH_2)_kSO_2(CH_2)_kO(O)C-$	$-(CH_2)_kS(CH_2)_kOC(O)-$
$-(CH_2)_kSO_2NR_1'(CH_2)_kO(O)C-$	$-(CH_2)_kSO_2-$
$-SO_2NR_1'(CH_2)_kO-$	$-SO_2NR_1'(CH_2)_k-$
$-(CH_2)_kO(CH_2)_kC(O)O-$	$-(CH_2)_kSO_2NR_1'(CH_2)_kC(O)O-$
$-(CH_2)_kSO_2(CH_2)_kC(O)O-$	$-CONR_1'(CH_2)_kC(O)O-$
$-(CH_2)_kS(CH_2)_kC(O)O-$	$-CH_2CH(OR_2')CH_2C(O)O-$
$-SO_2NR_1'(CH_2)_kC(O)O-$	$-(CH_2)_kO-$
$-C_kH_{2k}-OC(O)NH-$	$-C_kH_{2k}-NR_1'C(O)NH-$

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$-\text{OC(O)NR}'(\text{CH}_2)_k-$	$-(\text{CH}_2)_k\text{NR}'-$ and
$-(\text{CH}_2)_k\text{NR}'\text{C(O)O}-$	

8. (Once amended) The oligomers of claim 1 comprising compounds of the Formula:



wherein:

n is a number from 1 to 10 inclusive;

m is 1;

R_f is a perfluoroalkyl group having 1 to 12 carbon atoms, or a perfluoroheteroalkyl group having 3 to about 50 carbon atoms with all perfluorocarbon chains present having 1 to 6;

Q is $-\text{C}_k\text{H}_{2k}\text{-OC(O)NH-}$ or $-\text{C}_k\text{H}_{2k}\text{-NRC(O)NH-}$, wherein R_1' is H or lower alkyl, and k is an integer from 0 to about 20;

R^1 is a straight chain alkylene, of 1 to 14 carbon atoms;

R^2 is a polyvalent organic group which is a residue of the polyol, that is a straight or branched chain alkylene, cycloalkylene, arylene or heteroalkylene group of 1 to 14 carbon atoms[, preferably 1 to 8 carbon atoms, more preferably 1 to 4 carbon atoms, and most preferably two carbon atoms, or an arylene group of 6 to 12 carbon atoms]; at least a portion of R^2 groups are substituted with or contain one perfluoroalkyl group, perfluoroheteroalkyl group, perfluoroheteroalkylene group, or mixtures thereof.

9. The composition of claim 1 wherein the oligomer comprises the condensation reaction product of one or more fluorinated polyols, one or more non-fluorinated polyols, one or more polyisocyanates and one or more monofunctional fluorine-containing compounds.

10. (Once amended) The composition of claim 1 wherein the oligomer comprises the condensation reaction product of one or more fluorinated polyols, an excess amount (relative to the polyol) of one or [ore] more linear alkylene diisocyanates, and sufficient fluorinated monoalcohols to react with the terminal isocyanate groups

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11. The fluorochemical composition of Claim 1 wherein the fluorine containing group of said polyol is a perfluoroalkyl group of 1 to 12 carbon atoms.

12. The fluorochemical composition of Claim 1 wherein the fluorine containing group of said polyol is a perfluoroalkyl group of 3 to 5 carbon atoms.

13. The fluorochemical composition of Claim 1 wherein the fluorine containing group of said polyol is a perfluoroalkyl group of is perfluorobutyl.

14. The fluorochemical composition of Claim 1 wherein the monofunctional fluorine-containing compound is a compound of the following formula I:

$$R_f - Q'$$

wherein:

R_f is selected from the group consisting of perfluoroalkyl group having 1 to 12 carbon atoms, and perfluoroheteroalkyl group having 3 to about 50 carbon atoms with all perfluorocarbon chains present having 6 or fewer carbon atoms;

Q' is a functional group that is reactive with the terminal isocyanate of the polyisocyanate or terminal hydroxy group of the polyol.

15. The monofunctional fluorine-containing compound of claim 14 wherein Q' is selected from hydroxyl, secondary amino, oxazolinyl, oxazolonyl, acetyl, acetonyl, carboxyl, isocyanato, epoxy, aziridinyl, thio, and acyl halide groups.

16. The fluorochemical composition of claim 1 wherein said fluorochemical oligomer further comprises the reaction product of one or more non-fluorinated polyols.

17. A coating composition comprising a mixture comprising:
(a) a solvent; and
(b) the fluorochemical composition of Claim 1.

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18. The coating composition of claim 17 wherein the fluorochemical composition further comprises one or more water-solubilizing groups.

19. The coating composition of claim 18 wherein said mixture comprises an aqueous solution, dispersion or suspension.

Claims 20-29 withdrawn